

United States of America

DRAFT PROPOSAL FOR THE WORK OF THE CONFERENCE

Agenda Item 1.12 (b): to consider allocations and regulatory issues related to the space science services in accordance with Resolution **723 (Rev. WRC-2000)** and to review all Earth exploration-satellite service and space research service allocations between 35 and 38 GHz, taking into account Resolution **730(WRC-2000)**;

Background Information: The 7 145-7 235 MHz band is allocated by footnote **5.460** on a primary basis to the space research service (Earth-to-space), subject to agreement under No. **9.21**. The companion downlink band, 8 400-8 500 MHz, is allocated on a primary basis in the Table of Frequency Allocations. These bands are used on a worldwide basis for cross-support in accordance with international agreements concluded between a number of space agencies. The footnote calling for agreement under No. **9.21** was originally applied at **WARC-ST-71** because the coordination parameters necessary for Earth station coordination were not agreed at that time. Currently, Appendix **S7** contains these coordination parameters for transmitting Earth stations for the space research service in the 7 145-7 235 MHz band. Therefore, the premise behind requiring agreement under No. **9.21** no longer exists.

Proposal:

ARTICLE 5 Frequency Allocations

7 075-7 250 MHz			
Allocation to Services			
	Region 1	Region 2	Region 3
USA/ /1 MOD	7 075-7 1457250	FIXED	
		MOBILE	
		5.458 5.459 5.460	
USA/ /2 MOD	<u>7 145-7 235</u>	FIXED	
		MOBILE	
		<u>SPACE RESEARCH (Earth-to-space) MOD 5.460</u>	
		5.458 5.459 5.460	
USA/ /3 MOD	<u>7 235-7 250</u>	FIXED	
		MOBILE	
		5.458 5.459 5.460	

Reasons: To incorporate in the Table of Frequency Allocations the existing primary allocation to the space research service in the band 7 145-7 235 MHz under No. **5.460**.

USA/ /4
MOD

5.460 *Additional allocation:* ~~the band 7 145-7 235 MHz is also allocated to the space research (Earth-~~
~~to-space) service on a primary basis, subject to agreement obtained under Article 14/No. 9.21.~~ The use
of the band 7 145-7 190 MHz by the space research service is restricted to deep space; no emissions to
deep space shall be effected in the band 7 190-7 235 MHz.

Reasons: These changes are consequential to the table amendments offered above.

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Agenda Item 1.12 (d): to consider allocations and regulatory issues related to the space science services in accordance with Resolution **723 (Rev. WRC-2000)** and to review all Earth exploration-satellite service and space research service allocations between 35 and 38 GHz, taking into account Resolution **730 (WRC-2000)**;

Background Information: Signals received on Earth from spacecraft in deep space are extremely weak and highly susceptible to interference of all kinds. In particular, the presence of near-Earth airborne and spaceborne interference sources can easily overwhelm the desired (but extremely weak) signal from deep space. Geographic isolation is not possible in the case of near-Earth orbiting spacecraft sharing the same band with space research (deep space). To satisfy present and future science deep space data return requirements, heavy reliance is being placed on space-to-Earth links in the 31.8-32.3 GHz band. The lack of compatibility between the inter-satellite service and the space research service (deep space) has been demonstrated within ITU-R Studies and is documented in Recommendation ITU-R SA.1016.

Proposal:

ARTICLE 5 Frequency Allocations

29.9-34.2 GHz

Allocation to services			
	Region 1	Region 2	Region 3
USA/ /1 MOD	31.8-32	FIXED 5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 5.547B MOD 5.548	
USA/ /2 MOD	32-32.3	FIXED 5.547A INTER-SATELLITE RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) 5.547 MOD 5.547C MOD 5.548	
USA/ /3 MOD	32.3-33	FIXED 5.547A INTER-SATELLITE RADIONAVIGATION 5.547 5.547D MOD 5.548	

Reasons: To protect the reception of deep-space space research service communications signals from harmful interference.

USA/ /4
MOD

5.547C *Alternative allocation:* in the United States, the band 32-32.3 GHz is allocated to the ~~inter-satellite~~, radionavigation and space research (deep space) (space-to-Earth) services on a primary basis. (WRC-97)

Reasons: This change is consequential to the table amendment offered above.

USA/ /5
MOD

5.548 In designing systems for the inter-satellite service in the band 32.3-33 GHz, and for the radionavigation services in the band 32 - 33 GHz, and for the space research service (deep space) in the band 31.8-32.3 GHz, administrations shall take all necessary measures to prevent harmful interference between these services, bearing in mind the safety aspects of the radionavigation service (see Recommendation **707**).

Reasons: This change is consequential to the table amendment offered above.

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Agenda Item 1.12 (e): to consider allocations and regulatory issues related to the space science services in accordance with Resolution **723 (Rev.WRC-2000)** and to review all Earth exploration-satellite service and space research service allocations between 35 and 38 GHz, taking into account Resolution **730 (WRC-2000)**;

Background Information: Resolution **730 (WRC-2000)**, resolves

- 1 to invite ITU-R to study sharing between spaceborne precipitation radars and other services in the band 35.5 - 35.6 GHz;
- 2 to recommend that WRC-03 review the results of those studies and consider the removal of the restriction currently contained in No. **5.551A** on spaceborne precipitation radars operating in the Earth exploration-satellite service in the band 35.5 - 35.6 GHz.

The frequency band 35.5 – 36 GHz is allocated to the Earth exploration-satellite (active) service on a primary basis limited by footnote **5.551A** and is also allocated to the meteorological aids and radiolocation services on a primary basis. Prior to WRC-97, operation by radars located on spacecraft on a primary basis was permitted in the band 35.5 – 35.6 GHz by footnote **5.551 (SUP WRC-97)**. This 100 MHz band is used by precipitation radars located on spacecraft. Furthermore, studies have shown that sharing between spaceborne active sensors and radiolocation systems in the band 35.5 – 36 GHz is feasible, as indicated in § 5.7.2.1 of Chapter 5 of the CPM-97 Report. ITU-R Joint Working Party 7-8R, which studied compatibility between spaceborne active sensors and other services prior to WRC-97, noted that in the band 33.4 – 36 GHz, compatibility analysis between spaceborne altimeters and scatterometers and terrestrial radars in the radiolocation service indicated that interference from these spaceborne active sensors into the radiolocation systems would not exceed the interference criteria for terrestrial radiolocation systems that are in normal use. JWP 7-8R also examined the compatibility of active sensors with radiolocation systems from the aspect of potential interference from these radiolocation systems into altimeters and scatterometers and concluded that interference into these sensors would not exceed their interference criteria. JWP 7-8R and subsequently CPM-97 concluded that compatibility between known spaceborne active sensors and radiolocation systems in the 33.4 – 36 GHz band existed and that an allocation of 500 MHz in this frequency range should be made. Therefore, there was no technical reason to apply the footnote **5.551A** to the table allocation for the Earth exploration-satellite (active) and space research (active) services in the 35.5 - 36 GHz band.

With respect to the EESS (passive) and SRS (passive) allocations in the band 36 – 37 GHz and the space research service allocation in the band 37 – 38 GHz, there have been no changes in the requirements for these allocations, nor have there been changes in the sharing conditions in these bands that would warrant any changes.

Proposal:

ARTICLE 5
Frequency Allocations

35.5-36 GHz**USA/ / 1
MOD**

Allocation to services		
Region 1	Region 2	Region 3
35.5-36	EARTH EXPLORATION-SATELLITE (active) METEOROLOGICAL AIDS RADIOLOCATION SPACE RESEARCH (active) 5.549 5.551A	

**USA/ / 2
SUP
~~5.551A~~**

Reasons: Based on demonstrated compatibility between active sensors in the earth exploration-satellite and space research services and the other services allocated on a primary basis in the 35.5 - 36 GHz band, the restrictions in this footnote are not necessary and the footnote should be suppressed.

36-38 GHz**USA/ / 3
NOC**

Allocation to services		
Region 1	Region 2	Region 3
36-37	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) 5.149	
37-37.5	FIXED MOBILE SPACE RESEARCH (space-to-Earth) 5.547	
37.5-38	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) 5.547	5.551AA

**USA/ / 4
NOC****USA/ / 5
NOC**

Reasons: There have been no changes in the requirements for these allocations, nor have there been changes in the sharing conditions in these bands that would warrant any changes.
